



## SEQUENCE LISTING

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Wu, Ying-Jye

<120> Methods for the Detection of Cervical Cancer

<130> MTP-023DV2

<140> US 09/315,355

<141> 1999-05-17

<150> US 08/989,045

<151> 1997-12-11

<150> US 08/705,660

<151> 1996-08-30

<160> 48

<170> PatentIn version 3.0

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<212> PRT

<213> Homo sapiens

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Pro Ala Ala Ser Leu Ala Val His Thr Asp Lys  
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Phe Ser Gly Gln Ile Glu Arg  
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Arg Leu Ile Ala Glu Ala Lys Glu Lys  
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Pro Ser Leu Val His Ser Arg Asp Met

1 5

&lt;210&gt; 5

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 5

Val Trp Asp Ile Ser Thr Val Ser Ser Val Asn Glu Ala Phe Gly Arg

1 5 10 15

&lt;210&gt; 6

&lt;211&gt; 18

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 6

Leu Val Leu Gly Ser Ala Arg Asn Ser Ser Ile Ser Gly Pro Phe Gly

1 5 10 15

Ser Arg

&lt;210&gt; 7

&lt;211&gt; 25

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 7

Ser Asp Lys Pro Ile Phe Thr Leu Asn Ala His Asn Asp Glu Ile Ser

1 5 10 15

Gly Leu Asp Leu Ser Ser Gln Ile Lys

20 25

&lt;210&gt; 8

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 8

Val Gln Thr Leu Gln Phe His Pro Phe Glu Ala Gln Thr Leu Ile Ser

1 5 10 15

Gly Ser Tyr Asp Lys

20

&lt;210&gt; 9

&lt;211&gt; 23

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Met Gly Val Leu Phe Cys Ser Ser Cys Cys Pro Asp Leu Pro Phe Ile  
 1 5 10 15

Tyr Ala Phe Gly Gly Gln Lys  
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Met Asn Arg Ser Arg Gln Val Thr Cys Val Ala Trp Val Arg Cys Gly  
 1 5 10 15

Val Ala Lys Glu Thr Pro Asp Lys Val Glu Leu Ser Lys Glu Glu Val  
 20 25 30

Lys Arg Leu Ile Ala Glu Ala Lys Glu Lys Leu Gln Glu Glu Gly Gly  
 35 40 45

Gly Ser Asp Glu Glu Glu Thr Gly Ser Pro Ser Glu Asp Gly Met Gln  
 50 55 60

Ser Ala Arg Thr Gln Ala Arg Pro Arg Glu Pro Leu Glu Asp Gly Asp  
 65 70 75 80

Pro Glu Asp Asp Arg Thr Leu Asp Asp Asp Glu Leu Ala Glu Tyr Asp  
 85 90 95

Leu Asp Lys Tyr Asp Glu Glu Gly Asp Pro Asp Ala Glu Thr Leu Gly  
 100 105 110

Glu Ser Leu Leu Gly Leu Thr Val Tyr Gly Ser Asn Asp Gln Asp Pro  
 115 120 125

Tyr Val Thr Leu Lys Asp Thr Glu Gln Tyr Glu Arg Glu Asp Phe Leu  
 130 135 140

Ile Lys Pro Ser Asp Asn Leu Ile Val Cys Gly Arg Ala Glu Gln Asp  
 145 150 155 160

Gln Cys Asn Leu Glu Val His Val Tyr Asn Gln Glu Glu Asp Ser Phe  
 165 170 175

Tyr Val His His Asp Ile Leu Leu Ser Ala Tyr Pro Leu Ser Val Glu  
 180 185 190

Trp Leu Asn Phe Asp Pro Ser Pro Asp Asp Ser Thr Gly Asn Tyr Ile  
 195 200 205

Ala Val Gly Asn Met Thr Pro Val Ile Glu Val Trp Asp Leu Asp Ile  
 210 215 220  
 Val Asp Ser Leu Glu Pro Val Phe Thr Leu Gly Ser Lys Leu Ser Lys  
 225 230 235 240  
 Lys Lys Lys Lys Lys Gly Lys Lys Ser Ser Ser Ala Glu Gly His Thr  
 245 250 255  
 Asp Ala Val Leu Asp Leu Ser Trp Asn Lys Leu Ile Arg Asn Val Leu  
 260 265 270  
 Ala Ser Ala Ser Ala Asp Asn Thr Val Ile Leu Trp Asp Met Ser Leu  
 275 280 285  
 Gly Lys Pro Ala Ala Ser Leu Ala Val His Thr Asp Lys Val Gln Thr  
 290 295 300  
 Leu Gln Phe His Pro Phe Glu Ala Gln Thr Leu Ile Ser Gly Ser Tyr  
 305 310 315 320  
 Asp Lys Ser Val Ala Leu Tyr Asp Cys Arg Ser Pro Asp Glu Ser His  
 325 330 335  
 Arg Met Trp Arg Phe Ser Gly Gln Ile Glu Arg Val Thr Trp Asn His  
 340 345 350  
 Phe Ser Pro Cys His Phe Leu Ala Ser Thr Asp Asp Gly Phe Val Tyr  
 355 360 365  
 Asn Leu Asp Ala Arg Ser Asp Lys Pro Ile Phe Thr Leu Asn Ala His  
 370 375 380  
 Asn Asp Glu Ile Ser Gly Leu Asp Leu Ser Ser Gln Ile Lys Gly Cys  
 385 390 395 400  
 Leu Val Thr Ala Ser Ala Asp Lys Tyr Val Lys Ile Trp Asp Ile Leu  
 405 410 415  
 Gly Asp Arg Pro Ser Leu Val His Ser Arg Asp Met Lys Met Gly Val  
 420 425 430  
 Leu Phe Cys Ser Ser Cys Cys Pro Asp Leu Pro Phe Ile Tyr Ala Phe  
 435 440 445  
 Gly Gly Gln Lys Glu Gly Leu Arg Val Trp Asp Ile Ser Thr Val Ser  
 450 455 460  
 Ser Val Asn Glu Ala Phe Gly Arg Arg Glu Arg Leu Val Leu Gly Ser  
 465 470 475 480  
 Ala Arg Asn Ser Ser Ile Ser Gly Pro Phe Gly Ser Arg Ser Ser Asp  
 485 490 495  
 Thr Pro Met Glu Ser  
 500

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<400> 11

Asp Tyr Ser Gln Tyr Tyr Arg  
1 5

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<400> 12

Asn His Glu Glu Glu Met Asn Ala Leu Arg  
1 5 10

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<400> 13

Leu Leu Glu Gly Glu Asp Ala His Leu Thr Gln Tyr Lys  
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<210> 14  
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<400> 14

Ile Leu Asn Glu Met Arg  
1 5

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<213> Homo sapiens

<400> 15

Ser Glu Ile Ser Glu Leu Arg  
1 5

<210> 16  
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<213> Homo sapiens

<400> 16

Asp Ala Glu Asp Trp Phe Phe Ser Lys  
1 5

<210> 17  
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<213> Homo sapiens

<400> 17

Leu Ser Val Glu Ala Asp Ile Asn Gly Leu Arg  
1 5 10

<210> 18  
<211> 432  
<212> PRT  
<213> Homo sapiens

<400> 18

Met Thr Thr Ser Ile Arg Gln Phe Thr Ser Ser Ser Ser Ile Lys Gly  
1 5 10 15

Ser Ser Gly Leu Gly Gly Gly Ser Ser Arg Thr Ser Cys Arg Leu Ser  
20 25 30

Gly Gly Leu Gly Ala Gly Ser Cys Arg Leu Gly Ser Ala Gly Gly Leu  
35 40 45

Gly Ser Thr Leu Gly Gly Ser Ser Tyr Ser Ser Cys Tyr Ser Phe Gly  
50 55 60

Ser Gly Gly Gly Tyr Gly Ser Ser Phe Gly Gly Val Asp Gly Leu Leu  
65 70 75 80

Ala Gly Gly Glu Lys Ala Thr Met Gln Asn Leu Asn Asp Arg Leu Ala  
85 90 95

Ser Tyr Leu Asp Lys Val Arg Ala Leu Glu Glu Ala Asn Thr Glu Leu  
100 105 110

Glu Val Lys Ile Arg Asp Trp Tyr Gln Arg Gln Ala Pro Gly Pro Ala  
115 120 125

Arg Asp Tyr Ser Gln Tyr Tyr Arg Thr Ile Glu Glu Leu Gln Asn Lys  
130 135 140

Ile Leu Thr Ala Thr Val Asp Asn Ala Asn Ile Leu Leu Gln Ile Asp  
145 150 155 160

Asn Ala Arg Leu Ala Ala Asp Asp Phe Arg Thr Lys Phe Glu Thr Glu  
165 170 175

Gln Ala Leu Arg Leu Ser Val Glu Ala Asp Ile Asn Gly Leu Arg Arg  
180 185 190

Val Leu Asp Glu Leu Thr Leu Ala Arg Ala Asp Leu Glu Met Gln Ile

195					200					205					
Glu	Asn	Leu	Lys	Glu	Glu	Leu	Ala	Tyr	Leu	Lys	Lys	Asn	His	Glu	Glu
210					215					220					
Glu	Met	Asn	Ala	Leu	Arg	Gly	Gln	Val	Gly	Gly	Glu	Ile	Asn	Val	Glu
225					230					235					240
Met	Asp	Ala	Ala	Pro	Gly	Val	Asp	Leu	Ser	Arg	Ile	Leu	Asn	Glu	Met
				245					250					255	
Arg	Asp	Gln	Tyr	Glu	Lys	Met	Ala	Glu	Lys	Asn	Arg	Lys	Asp	Ala	Glu
			260					265					270		
Asp	Trp	Phe	Phe	Ser	Lys	Thr	Glu	Glu	Leu	Asn	Arg	Glu	Val	Ala	Thr
			275				280					285			
Asn	Ser	Glu	Leu	Val	Gln	Ser	Gly	Lys	Ser	Glu	Ile	Ser	Glu	Leu	Arg
			290				295					300			
Arg	Thr	Met	Gln	Ala	Leu	Glu	Ile	Glu	Leu	Gln	Ser	Gln	Leu	Ser	Met
305					310					315					320
Lys	Ala	Ser	Leu	Glu	Gly	Asn	Leu	Ala	Glu	Thr	Glu	Asn	Arg	Tyr	Cys
				325					330					335	
Val	Gln	Leu	Ser	Gln	Ile	Gln	Gly	Leu	Ile	Gly	Ser	Val	Glu	Glu	Gln
			340					345					350		
Leu	Ala	Gln	Leu	Arg	Cys	Glu	Met	Glu	Gln	Gln	Asn	Gln	Glu	Tyr	Lys
			355				360					365			
Ile	Leu	Leu	Asp	Val	Lys	Thr	Arg	Leu	Glu	Gln	Glu	Ile	Ala	Thr	Tyr
			370				375					380			
Arg	Arg	Leu	Leu	Glu	Gly	Glu	Asp	Ala	His	Leu	Thr	Gln	Tyr	Lys	Lys
385					390					395					400
Glu	Pro	Val	Thr	Thr	Arg	Gln	Val	Arg	Thr	Ile	Val	Glu	Glu	Val	Gln
				405					410					415	
Asp	Gly	Lys	Val	Ile	Ser	Ser	Arg	Glu	Gln	Val	His	Gln	Thr	Thr	Arg
			420					425					430		

<210> 19  
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 <213> Homo sapiens

<400> 19

Phe	Gly	Gly	Asn	Pro	Gly	Gly	Phe	Gly	Asn	Gln	Gly	Gly	Phe	Gly	Asn
1				5					10					15	

Ser Arg

<210> 20  
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<400> 20

Trp Cys Asp Cys Lys  
 1 5

<210> 21  
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 <212> PRT  
 <213> Homo sapiens

<400> 21

Thr Thr Glu Gln Asp Leu Lys  
 1 5

<210> 22  
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<400> 22

Gly Phe Gly Phe Val Arg  
 1 5

<210> 23  
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<400> 23

Leu Pro Asn Ser Lys Gln Ser Gln Asp Gln Pro Leu Arg  
 1 5 10

<210> 24  
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 <212> PRT  
 <213> Homo sapiens

<400> 24

Lys Met Asp Glu Thr Asp Ala Ser Ser Ala Val Lys  
 1 5 10

<210> 25  
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 <213> Homo sapiens

<400> 25



Thr Ser Asp Leu Ile Val Leu Gly Leu Pro Trp Lys  
1 5 10

<210> 26  
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<213> Homo sapiens

<400> 26

Met Ser Glu Tyr Ile Arg Val Thr Glu Asp Glu Asn Asp Glu Pro Ile  
1 5 10 15

Glu Ile Pro Ser Glu Asp Asp Gly Thr Val Leu Leu Ser Thr Val Thr  
20 25 30

Ala Gln Phe Pro Gly Ala Cys Gly Leu Arg Tyr Arg Asn Pro Val Ser  
35 40 45

Gln Cys Met Arg Gly Val Arg Leu Val Glu Gly Ile Leu His Ala Pro  
50 55 60

Asp Ala Gly Trp Gly Asn Leu Val Tyr Val Val Asn Tyr Pro Lys Asp  
65 70 75 80

Asn Lys Arg Lys Met Asp Glu Thr Asp Ala Ser Ser Ala Val Lys Val  
85 90 95

Lys Arg Ala Val Gln Lys Thr Ser Asp Leu Ile Val Leu Gly Leu Pro  
100 105 110

Trp Lys Thr Thr Glu Gln Asp Leu Lys Glu Tyr Phe Ser Thr Phe Gly  
115 120 125

Glu Val Leu Met Val Gln Val Lys Lys Asp Leu Lys Thr Gly His Ser  
130 135 140

Lys Gly Phe Gly Phe Val Arg Phe Thr Glu Tyr Glu Thr Gln Val Lys  
145 150 155 160

Val Met Ser Gln Arg His Met Ile Asp Gly Arg Trp Cys Asp Cys Lys  
165 170 175

Leu Pro Asn Ser Lys Gln Ser Gln Asp Glu Pro Leu Arg Ser Arg Lys  
180 185 190

Val Phe Val Gly Arg Cys Thr Glu Asp Met Thr Glu Asp Glu Leu Arg  
195 200 205

Glu Phe Phe Ser Gln Tyr Gly Asp Val Met Asp Val Phe Ile Pro Lys  
210 215 220

Pro Phe Arg Ala Phe Ala Phe Val Thr Phe Ala Asp Asp Gln Ile Ala  
225 230 235 240

Gln Ser Leu Cys Gly Glu Asp Leu Ile Ile Lys Gly Ile Ser Val His  
245 250 255

Ile Ser Asn Ala Glu Pro Lys His Asn Ser Asn Arg Gln Leu Glu Arg  
 260 265 270  
 Ser Gly Arg Phe Gly Gly Asn Pro Gly Gly Phe Gly Asn Gln Gly Gly  
 275 280 285  
 Phe Gly Asn Ser Arg Gly Gly Gly Ala Gly Leu Gly Asn Asn Gln Gly  
 290 295 300  
 Ser Asn Met Gly Gly Gly Met Asn Phe Gly Ala Phe Ser Ile Asn Pro  
 305 310 315 320  
 Ala Met Met Ala Ala Ala Gln Ala Ala Leu Gln Ser Ser Trp Gly Met  
 325 330 335  
 Met Gly Met Leu Ala Ser Gln Gln Asn Gln Ser Gly Pro Ser Gly Asn  
 340 345 350  
 Asn Gln Asn Gln Gly Asn Met Gln Arg Glu Pro Asn Gln Ala Phe Gly  
 355 360 365  
 Ser Gly Asn Asn Ser Tyr Ser Gly Ser Asn Ser Gly Ala Ala Ile Gly  
 370 375 380  
 Trp Gly Ser Ala Ser Asn Ala Gly Ser Gly Ser Gly Phe Asn Gly Gly  
 385 390 395 400  
 Phe Gly Ser Ser Met Asp Ser Lys Ser Ser Gly Trp Gly Met  
 405 410

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<400> 27

Asn Tyr Tyr Arg  
 1

<210> 28  
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<400> 28

Asn Tyr Tyr Arg  
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<210> 29  
 <211> 6  
 <212> PRT  
 <213> Homo sapiens

<400> 29

Val Gln Glu Ala Gln Lys  
1 5

<210> 30  
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<212> PRT  
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<400> 30

Glu Val Ala Asp Cys Phe Lys  
1 5

<210> 31  
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<212> PRT  
<213> Homo sapiens

<400> 31

His Asp Gly Thr Gly Gly Gln Ser Ile Tyr Gly Asp Lys Phe Glu Asp  
1 5 10 15

Glu Asn Phe Asp Val Leu  
20

<210> 32  
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<220>  
<221> misc\_feature  
<222> (7)..(7)  
<223> wherein Xaa is an unidentified amino acid

<400> 32

Ile Thr Met Glu Leu Phe Xaa Asn Ile Val Pro Arg  
1 5 10

<210> 33  
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<212> PRT  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (19)..(24)  
<223> wherein each Xaa is an unidentified amino acid

<400> 33

His Thr Gly Pro Gly Leu Leu Ser Met Ala Asn Gln Gly Gln Asn Thr

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Asn Asn Xaa Xaa Phe Val Ile Xaa Leu Lys			
	20	25	
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<400> 34			
Met Arg Arg Ser Lys Ala Asp Val Glu Arg Tyr Ile Ala Ser Val Gln			
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Gly Ser Thr Pro Ser Pro Arg Gln Lys Ser Met Lys Gly Phe Tyr Phe			
	20	25	30
Ala Lys Leu Tyr Tyr Glu Ala Lys Glu Tyr Asp Leu Ala Lys Lys Tyr			
	35	40	45
Ile Cys Thr Tyr Ile Asn Val Gln Glu Arg Asp Pro Lys Ala His Arg			
	50	55	60
Phe Leu Gly Leu Leu Tyr Glu Leu Glu Glu Asn Thr Asp Lys Ala Val			
65	70	75	80
Glu Cys Tyr Arg Arg Ser Val Glu Leu Asn Pro Thr Gln Lys Asp Leu			
	85	90	95
Val Leu Lys Ile Ala Glu Leu Leu Cys Lys Asn Asp Val Thr Asp Gly			
	100	105	110
Arg Ala Lys Tyr Trp Leu Glu Arg Ala Ala Lys Leu Phe Pro Gly Ser			
	115	120	125
Pro Ala Ile Tyr Lys Leu Lys Glu Gln Leu Leu Asp Cys Glu Gly Glu			
	130	135	140
Asp Gly Trp Asn Lys Leu Phe Asp Leu Ile Gln Ser Glu Leu Tyr Val			
145	150	155	160
Arg Pro Asp Asp Val His Val Asn Ile Arg Leu Val Glu Val Tyr Arg			
	165	170	175
Ser Thr Lys Arg Leu Lys Asp Ala Val Ala His Cys His Glu Ala Glu			
	180	185	190
Arg Asn Ile Ala Leu Arg Ser Ser Leu Glu Trp Asn Ser Cys Val Val			
	195	200	205
Gln Thr Leu Lys Glu Tyr Leu Glu Ser Leu Gln Cys Leu Glu Ser Asp			
	210	215	220
Lys Ser Asp Trp Arg Ala Thr Asn Thr Asp Leu Leu Leu Ala Tyr Ala			
225	230	235	240

Asn	Leu	Met	Leu	Leu	Thr	Leu	Ser	Thr	Arg	Asp	Val	Gln	Glu	Ser	Arg		
				245					250					255			
Glu	Leu	Leu	Gln	Ser	Phe	Asp	Ser	Ala	Leu	Gln	Ser	Val	Lys	Ser	Leu		
			260					265					270				
Gly	Gly	Asn	Asp	Glu	Leu	Ser	Ala	Thr	Phe	Leu	Glu	Met	Lys	Gly	His		
		275					280					285					
Phe	Tyr	Met	His	Ala	Gly	Ser	Leu	Leu	Leu	Lys	Met	Gly	Gln	His	Ser		
	290					295					300						
Ser	Asn	Val	Gln	Trp	Arg	Ala	Leu	Ser	Glu	Leu	Ala	Ala	Leu	Cys	Tyr		
305					310					315					320		
Leu	Ile	Ala	Phe	Gln	Val	Pro	Arg	Pro	Lys	Ile	Lys	Leu	Ile	Lys	Gly		
				325					330					335			
Glu	Ala	Gly	Gln	Asn	Leu	Leu	Glu	Met	Met	Ala	Cys	Asp	Arg	Leu	Ser		
			340					345					350				
Gln	Ser	Gly	His	Met	Leu	Leu	Asn	Leu	Ser	Arg	Gly	Lys	Gln	Asp	Phe		
		355					360					365					
Leu	Lys	Glu	Ile	Val	Glu	Thr	Phe	Ala	Asn	Lys	Ser	Gly	Gln	Ser	Ala		
	370					375					380						
Leu	Tyr	Asp	Ala	Leu	Phe	Ser	Ser	Gln	Ser	Pro	Lys	Asp	Thr	Ser	Phe		
385					390					395					400		
Leu	Gly	Ser	Asp	Asp	Ile	Gly	Asn	Ile	Asp	Val	Arg	Glu	Pro	Glu	Leu		
			405					410						415			
Glu	Asp	Leu	Thr	Arg	Tyr	Asp	Val	Gly	Ala	Ile	Arg	Ala	His	Asn	Gly		
		420						425					430				
Ser	Leu	Gln	His	Leu	Thr	Trp	Leu	Gly	Leu	Gln	Trp	Asn	Ser	Leu	Pro		
	435						440					445					
Ala	Leu	Pro	Gly	Ile	Arg	Lys	Trp	Leu	Lys	Gln	Leu	Phe	His	His	Leu		
	450					455					460						
Pro	His	Glu	Thr	Ser	Arg	Leu	Glu	Thr	Asn	Ala	Pro	Glu	Ser	Ile	Cys		
465					470					475					480		
Ile	Leu	Asp	Leu	Glu	Val	Phe	Leu	Leu	Gly	Val	Val	Tyr	Thr	Ser	His		
			485						490					495			
Leu	Gln	Leu	Lys	Glu	Lys	Cys	Asn	Ser	His	His	Ser	Ser	Tyr	Gln	Pro		
		500						505					510				
Leu	Cys	Leu	Pro	Leu	Pro	Val	Cys	Lys	Gln	Leu	Cys	Thr	Glu	Arg	Gln		
	515						520					525					
Lys	Ser	Trp	Trp	Asp	Ala	Val	Cys	Thr	Leu	Ile	His	Arg	Lys	Ala	Val		
	530					535					540						

Pro Gly Asn Val Ala Lys Leu Arg Leu Leu Val Gln His Glu Ile Asn  
 545 550 555 560  
 Thr Leu Arg Ala Gln Glu Lys His Gly Leu Gln Pro Ala Leu Leu Val  
 565 570 575  
 His Trp Ala Glu Cys Leu Gln Lys Thr Gly Ser Gly Leu Asn Ser Phe  
 580 585 590  
 Tyr Asp Gln Arg Glu Tyr Ile Gly Arg Ser Val His Tyr Trp Lys Lys  
 595 600 605  
 Val Leu Pro Leu Leu Lys Ile Ile Lys Lys Lys Asn Ser Ile Pro Glu  
 610 615 620  
 Pro Ile Asp Pro Leu Phe Lys His Phe His Ser Val Asp Ile Gln Ala  
 625 630 635 640  
 Ser Glu Ile Val Glu Tyr Glu Glu Asp Ala His Ile Thr Phe Ala Ile  
 645 650 655  
 Leu Asp Ala Val Asn Gly Asn Ile Glu Asp Ala Val Thr Ala Phe Glu  
 660 665 670  
 Ser Ile Lys Ser Val Val Ser Tyr Trp Asn Leu Ala Leu Ile Phe His  
 675 680 685  
 Arg Lys Ala Glu Asp Ile Glu Asn Asp Ala Leu Ser Pro Glu Glu Gln  
 690 695 700  
 Glu Glu Cys Lys Asn Tyr Leu Arg Lys Thr Arg Asp Tyr Leu Ile Lys  
 705 710 715 720  
 Ile Ile Asp Asp Ser Asp Ser Asn Leu Ser Val Val Lys Lys Leu Pro  
 725 730 735  
 Val Pro Leu Glu Ser Val Lys Glu Met Leu Asn Ser Val Met Gln Glu  
 740 745 750  
 Leu Glu Asp Tyr Ser Glu Gly Gly Pro Leu Tyr Lys Asn Gly Ser Leu  
 755 760 765  
 Arg Asn Ala Asp Ser Glu Ile Lys Arg Ser Thr Pro Ser Pro Thr Arg  
 770 775 780  
 Tyr Ser Leu Ser Pro Ser Lys Ser Tyr Lys Tyr Ser Pro Lys Thr Pro  
 785 790 795 800  
 Pro Arg Trp Ala Glu Asp Gln Asn Ser Leu Leu Lys Met Ile Cys Gln  
 805 810 815  
 Gln Val Glu Ala Ile Lys Lys Glu Met Gln Glu Leu Lys Leu Asn Ser  
 820 825 830  
 Ser Asn Ser Ala Ser Pro His Arg Trp Pro Thr Glu Asn Tyr Gly Pro  
 835 840 845

Asp Ser Val Pro Asp Gly Tyr Gln Gly Ser Gln Thr Phe His Gly Ala  
 850 855 860

Pro Leu Thr Val Ala Thr Thr Gly Pro Ser Val Tyr Tyr Ser Gln Ser  
 865 870 875 880

Pro Ala Tyr Asn Ser Gln Tyr Leu Leu Arg Pro Ala Ala Asn Val Thr  
 885 890 895

Pro Thr Lys Gly Pro Val Tyr Gly Met Asn Arg Leu Pro Pro Gln Gln  
 900 905 910

His Ile Tyr Ala Tyr Pro Gln Gln Met His Thr Pro Pro Val Gln Ser  
 915 920 925

Ser Ser Ala Cys Met Phe Ser Gln Glu Met Tyr Gly Pro Pro Ala Leu  
 930 935 940

Arg Phe Glu Ser Pro Ala Thr Gly Ile Leu Ser Pro Arg Gly Asp Asp  
 945 950 955 960

Tyr Phe Asn Tyr Asn Val Gln Gln Thr Ser Thr Asn Pro Pro Leu Pro  
 965 970 975

Glu Pro Gly Tyr Phe Thr Lys Pro Pro Ile Ala Ala His Ala Ser Arg  
 980 985 990

Ser Ala Glu Ser Lys Thr Ile Glu Phe Gly Lys Thr Asn Phe Val Gln  
 995 1000 1005

Pro Met Pro Gly Glu Gly Leu Arg Pro Ser Leu Pro Thr Gln Ala  
 1010 1015 1020

His Thr Thr Gln Pro Thr Pro Phe Lys Phe Asn Ser Asn Phe Lys  
 1025 1030 1035

Ser Asn Asp Gly Asp Phe Thr Phe Ser Ser Pro Gln Val Val Thr  
 1040 1045 1050

Gln Pro Pro Pro Ala Ala Tyr Ser Asn Ser Glu Ser Leu Leu Gly  
 1055 1060 1065

Leu Leu Thr Ser Asp Lys Pro Leu Gln Gly Asp Gly Tyr Ser Gly  
 1070 1075 1080

Ala Lys Pro Ile Pro Gly Gly Gln Thr Ile Gly Pro Arg Asn Thr  
 1085 1090 1095

Phe Asn Phe Gly Ser Lys Asn Val Ser Gly Ile Ser Phe Thr Glu  
 1100 1105 1110

Asn Met Gly Ser Ser Gln Gln Lys Asn Ser Gly Phe Arg Arg Ser  
 1115 1120 1125

Asp Asp Met Phe Thr Phe His Gly Pro Gly Lys Ser Val Phe Gly  
 1130 1135 1140

Thr	Pro	Thr	Leu	Glu	Thr	Ala	Asn	Lys	Asn	His	Glu	Thr	Asp	Gly
1145						1150					1155			
Gly	Ser	Ala	His	Gly	Asp	Asp	Asp	Asp	Asp	Gly	Pro	His	Phe	Glu
1160						1165					1170			
Pro	Val	Val	Pro	Leu	Pro	Asp	Lys	Ile	Glu	Val	Lys	Thr	Gly	Glu
1175						1180					1185			
Glu	Asp	Glu	Glu	Glu	Phe	Phe	Cys	Asn	Arg	Ala	Lys	Leu	Phe	Arg
1190						1195					1200			
Phe	Asp	Val	Glu	Ser	Lys	Glu	Trp	Lys	Glu	Arg	Gly	Ile	Gly	Asn
1205						1210					1215			
Val	Lys	Ile	Leu	Arg	His	Lys	Thr	Ser	Gly	Lys	Ile	Arg	Leu	Leu
1220						1225					1230			
Met	Arg	Arg	Glu	Gln	Val	Leu	Lys	Ile	Cys	Ala	Asn	His	Tyr	Ile
1235						1240					1245			
Ser	Pro	Asp	Met	Lys	Leu	Thr	Pro	Asn	Ala	Gly	Ser	Asp	Arg	Ser
1250						1255					1260			
Phe	Val	Trp	His	Ala	Leu	Asp	Tyr	Ala	Asp	Glu	Leu	Pro	Lys	Pro
1265						1270					1275			
Glu	Gln	Leu	Ala	Ile	Arg	Phe	Lys	Thr	Pro	Glu	Glu	Ala	Ala	Leu
1280						1285					1290			
Phe	Lys	Cys	Lys	Phe	Glu	Glu	Ala	Gln	Ser	Ile	Leu	Lys	Ala	Pro
1295						1300					1305			
Gly	Thr	Asn	Val	Ala	Met	Ala	Ser	Asn	Gln	Ala	Val	Arg	Ile	Val
1310						1315					1320			
Lys	Glu	Pro	Thr	Ser	His	Asp	Asn	Lys	Asp	Ile	Cys	Lys	Ser	Asp
1325						1330					1335			
Ala	Gly	Asn	Leu	Asn	Phe	Glu	Phe	Gln	Val	Ala	Lys	Lys	Glu	Gly
1340						1345					1350			
Ser	Trp	Trp	His	Cys	Asn	Ser	Cys	Ser	Leu	Lys	Asn	Ala	Ser	Thr
1355						1360					1365			
Ala	Lys	Lys	Cys	Val	Ser	Cys	Gln	Asn	Leu	Asn	Pro	Ser	Asn	Lys
1370						1375					1380			
Glu	Leu	Val	Gly	Pro	Pro	Leu	Ala	Glu	Thr	Val	Phe	Thr	Pro	Lys
1385						1390					1395			
Thr	Ser	Pro	Glu	Asn	Val	Gln	Asp	Arg	Phe	Ala	Leu	Val	Thr	Pro
1400						1405					1410			
Lys	Lys	Glu	Gly	His	Trp	Asp	Cys	Ser	Ile	Cys	Leu	Val	Arg	Asn
1415						1420					1425			



Glu Pro Thr Val Ser Arg Cys	Ile Ala Cys Gln Asn	Thr Lys Ser
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Ala Asn Lys Ser Gly Ser Ser	Phe Val His Gln Ala	Ser Phe Lys
1445	1450	1455
Phe Gly Gln Gly Asp Leu Pro	Lys Pro Ile Asn Ser	Asp Phe Arg
1460	1465	1470
Ser Val Phe Ser Thr Lys Glu	Gly Gln Trp Asp Cys	Ser Ala Cys
1475	1480	1485
Leu Val Gln Asn Glu Gly Ser	Ser Thr Lys Cys Ala	Ala Cys Gln
1490	1495	1500
Asn Pro Arg Lys Gln Ser Leu	Pro Ala Thr Ser Ile	Pro Thr Pro
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Ala Ser Phe Lys Phe Gly Thr	Ser Glu Thr Ser Lys	Thr Leu Lys
1520	1525	1530
Ser Gly Phe Glu Asp Met Phe	Ala Lys Lys Glu Gly	Gln Trp Asp
1535	1540	1545
Cys Ser Ser Cys Leu Val Arg	Asn Glu Ala Asn Ala	Thr Arg Cys
1550	1555	1560
Val Ala Cys Gln Asn Pro Asp	Lys Pro Ser Pro Ser	Thr Ser Val
1565	1570	1575
Pro Ala Pro Ala Ser Phe Lys	Phe Gly Thr Ser Glu	Thr Ser Lys
1580	1585	1590
Ala Pro Lys Ser Gly Phe Glu	Gly Met Phe Thr Lys	Lys Glu Gly
1595	1600	1605
Gln Trp Asp Cys Ser Val Cys	Leu Val Arg Asn Glu	Ala Ser Ala
1610	1615	1620
Thr Lys Cys Ile Ala Cys Gln	Asn Pro Gly Lys Gln	Asn Gln Thr
1625	1630	1635
Thr Ser Ala Val Ser Thr Pro	Ala Ser Ser Glu Thr	Ser Lys Ala
1640	1645	1650
Pro Lys Ser Gly Phe Glu Gly	Met Phe Thr Lys Lys	Glu Gly Gln
1655	1660	1665
Trp Asp Cys Ser Val Cys Leu	Val Arg Asn Glu Ala	Ser Ala Thr
1670	1675	1680
Lys Cys Ile Ala Cys Gln Asn	Pro Gly Lys Gln Asn	Gln Thr Thr
1685	1690	1695
Ser Ala Val Ser Thr Pro Ala	Ser Ser Glu Thr Ser	Lys Ala Pro
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Lys	Ser	Gly	Phe	Glu	Gly	Met	Phe	Thr	Lys	Lys	Glu	Gly	Gln	Trp
1715						1720					1725			
Asp	Cys	Ser	Val	Cys	Leu	Val	Arg	Asn	Glu	Ala	Ser	Ala	Thr	Lys
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Cys	Ile	Ala	Cys	Gln	Cys	Pro	Ser	Lys	Gln	Asn	Gln	Thr	Thr	Ala
1745						1750					1755			
Ile	Ser	Thr	Pro	Ala	Ser	Ser	Glu	Ile	Ser	Lys	Ala	Pro	Lys	Ser
1760						1765					1770			
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1775						1780					1785			
Val	Cys	Cys	Val	Gln	Asn	Glu	Ser	Ser	Ser	Leu	Lys	Cys	Val	Ala
1790						1795					1800			
Cys	Asp	Ala	Ser	Lys	Pro	Thr	His	Lys	Pro	Ile	Ala	Glu	Ala	Pro
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Ser	Ala	Phe	Thr	Leu	Gly	Ser	Glu	Met	Lys	Leu	His	Asp	Ser	Ser
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Gly	Ser	Gln	Val	Gly	Thr	Gly	Phe	Lys	Ser	Asn	Phe	Ser	Glu	Lys
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Val	Asp	Gln	Glu	Asn	Ser	Pro	Ser	Phe	Met	Phe	Gln	Gly	Ser	Ser
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Ser	Ala	Asp	Gly	Phe	Lys	Phe	Gly	Ile	Ser	Glu	Pro	Gly	Asn	Gln
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1925						1930					1935			
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1940						1945					1950			
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1955						1960					1965			
Lys	Gly	Phe	Ser	Gly	Ala	Gly	Glu	Lys	Leu	Phe	Ser	Ser	Gln	Tyr
1970						1975					1980			
Gly	Lys	Met	Ala	Asn	Lys	Ala	Asn	Thr	Ser	Gly	Asp	Phe	Glu	Lys
1985						1990					1995			

Asp	Asp	Asp	Ala	Tyr	Lys	Thr	Glu	Asp	Ser	Asp	Asp	Ile	His	Phe
2000						2005					2010			
Glu	Pro	Val	Val	Gln	Met	Pro	Glu	Lys	Val	Glu	Leu	Val	Thr	Gly
2015						2020					2025			
Glu	Glu	Asp	Glu	Lys	Val	Leu	Tyr	Ser	Gln	Arg	Val	Lys	Leu	Phe
2030						2035					2040			
Arg	Phe	Asp	Ala	Glu	Val	Ser	Gln	Trp	Lys	Glu	Arg	Gly	Leu	Gly
2045						2050					2055			
Asn	Leu	Lys	Ile	Leu	Lys	Asn	Glu	Val	Asn	Gly	Lys	Leu	Arg	Met
2060						2065					2070			
Leu	Met	Arg	Arg	Glu	Gln	Val	Leu	Lys	Val	Cys	Ala	Asn	His	Trp
2075						2080					2085			
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Glu	Phe	Lys	Gln	Lys	Phe	Glu	Glu	Cys	Gln	Arg	Leu	Leu	Leu	Asp
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Ala	Lys	Leu	Ile	Gln	Arg	Ala	Glu	Glu	Met	Lys	Ser	Gly	Leu	Lys
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Asp	Phe	Lys	Thr	Phe	Leu	Thr	Asn	Asp	Gln	Thr	Lys	Val	Thr	Glu
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2225						2230					2235			
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Glu Gln Val Val Phe Ser His Arg Ala Lys Leu Tyr Arg Tyr Asp	
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Lys Asp Val Gly Gln Trp Lys Glu Arg Gly Ile Gly Asp Ile Lys	
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Ile Leu Gln Asn Tyr Asp Asn Lys Gln Val Arg Ile Val Met Arg	
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2375	2380 2385
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Trp Thr Ala Cys Asp Phe Ala Asp Gly Glu Arg Lys Val Glu His	
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2420	2425 2430
Lys Ile Phe Asp Glu Ala Lys Thr Ala Gln Glu Lys Asp Ser Leu	
2435	2440 2445
Ile Thr Pro His Val Ser Arg Ser Ser Thr Pro Arg Glu Ser Pro	
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Cys Gly Lys Ile Ala Val Ala Val Leu Glu Glu Thr Thr Arg Glu	
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Arg Thr Asp Val Ile Gln Gly Asp Asp Val Ala Asp Ala Thr Ser	
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Glu Val Glu Val Ser Ser Thr Ser Glu Thr Thr Pro Lys Ala Val	
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Ser Ala Thr Gly Ser Leu Phe Gly Phe Ser Phe Asn Ala Pro Leu	
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Lys Ser Asn Asn Ser Glu Thr Ser Ser Val Ala Gln Ser Gly Ser	
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Glu Ser Lys Val Glu Pro Lys Lys Cys Glu Leu Ser Lys Asn Ser	
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Asp Ile Glu Gln Ser Ser Asp Ser Lys Val Lys Asn Leu Phe Ala	
2585	2590 2595
Ser Phe Pro Thr Glu Glu Ser Ser Ile Asn Tyr Thr Phe Lys Thr	
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Pro Glu Lys Ala Lys Glu Lys Lys Lys Pro Glu Asp Ser Pro Ser	
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Asp Asp Asp Val Leu Ile Val Tyr Glu Leu Thr Pro Thr Ala Glu	
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Gln Lys Ala Leu Ala Thr Lys Leu Lys Leu Pro Pro Thr Phe Phe	
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Cys Tyr Lys Asn Arg Pro Asp Tyr Val Ser Glu Glu Glu Glu Asp	
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Asp Glu Asp Phe Glu Thr Ala Val Lys Lys Leu Asn Gly Lys Leu	
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Tyr Leu Asp Gly Ser Glu Lys Cys Arg Pro Leu Glu Glu Asn Thr	
2690	2695 2700
Ala Asp Asn Glu Lys Glu Cys Ile Ile Val Trp Glu Lys Lys Pro	
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Thr Val Glu Glu Lys Ala Lys Ala Asp Thr Leu Lys Leu Pro Pro	
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Thr Phe Phe Cys Gly Val Cys Ser Asp Thr Asp Glu Asp Asn Gly	
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Asn Gly Glu Asp Phe Gln Ser Glu Leu Gln Lys Val Gln Glu Ala	
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Gln Lys Ser Gln Thr Glu Glu Ile Thr Ser Thr Thr Asp Ser Val	
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Tyr Thr Gly Gly Thr Glu Val Met Val Pro Ser Phe Cys Lys Ser	
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Glu Glu Pro Asp Ser Ile Thr Lys Ser Ile Ser Ser Pro Ser Val	
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Ser Ser Glu Thr Met Asp Lys Pro Val Asp Leu Ser Thr Arg Lys	
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Glu Ile Asp Thr Asp Ser Thr Ser Gln Gly Glu Ser Lys Ile Val	
2825	2830 2835
Ser Phe Gly Phe Gly Ser Ser Thr Gly Leu Ser Phe Ala Asp Leu	
2840	2845 2850

Ala Ser Ser Asn Ser Gly Asp Phe Ala Phe Gly Ser Lys Asp Lys	2855	2860	2865
Asn Phe Gln Trp Ala Asn Thr Gly Ala Ala Val Phe Gly Thr Gln	2870	2875	2880
Ser Val Gly Thr Gln Ser Ala Gly Lys Val Gly Glu Asp Glu Asp	2885	2890	2895
Gly Ser Asp Glu Glu Val Val His Asn Glu Asp Ile His Phe Glu	2900	2905	2910
Pro Ile Val Ser Leu Pro Glu Val Glu Val Lys Ser Gly Glu Glu	2915	2920	2925
Asp Glu Glu Ile Leu Phe Lys Glu Arg Ala Lys Leu Tyr Arg Trp	2930	2935	2940
Asp Arg Asp Val Ser Gln Trp Lys Glu Arg Gly Val Gly Asp Ile	2945	2950	2955
Lys Ile Leu Trp His Thr Met Lys Asn Tyr Tyr Arg Ile Leu Met	2960	2965	2970
Arg Arg Asp Gln Val Phe Lys Val Cys Ala Asn His Val Ile Thr	2975	2980	2985
Lys Thr Met Glu Leu Lys Pro Leu Asn Val Ser Asn Asn Ala Leu	2990	2995	3000
Val Trp Thr Ala Ser Asp Tyr Ala Asp Gly Glu Ala Lys Val Glu	3005	3010	3015
Gln Leu Ala Val Arg Phe Lys Thr Lys Glu Val Ala Asp Cys Phe	3020	3025	3030
Lys Lys Thr Phe Glu Glu Cys Gln Gln Asn Leu Met Lys Leu Gln	3035	3040	3045
Lys Gly His Val Ser Leu Ala Ala Glu Leu Ser Lys Glu Thr Asn	3050	3055	3060
Pro Val Val Phe Phe Asp Val Cys Ala Asp Gly Glu Pro Leu Gly	3065	3070	3075
Arg Ile Thr Met Glu Leu Phe Ser Asn Ile Val Pro Arg Thr Ala	3080	3085	3090
Glu Asn Phe Arg Ala Leu Cys Thr Gly Glu Lys Gly Phe Gly Phe	3095	3100	3105
Lys Asn Ser Ile Phe His Arg Val Ile Pro Asp Phe Val Cys Gln	3110	3115	3120
Gly Gly Asp Ile Thr Lys His Asp Gly Thr Gly Gly Gln Ser Ile	3125	3130	3135

Tyr Gly Asp Lys Phe Glu Asp Glu Asn Phe Asp Val Lys His Thr  
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Gly Pro Gly Leu Leu Ser Met Ala Asn Gln Gly Gln Asn Thr Asn  
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Asn Ser Gln Phe Val Ile Thr Leu Lys Lys Ala Glu His Leu Asp  
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Phe Lys His Val Val Phe Gly Phe Val Lys Asp Gly Met Asp Thr  
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Arg Gly Gln Val Ala Lys Leu Glu Ala Ala Leu Gly Glu Ala Lys Lys  
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Gln Leu Gln Asp Glu Met Leu Arg Arg Val Asp Ala Glu Asn Arg Leu  
 35 40 45

Gln Thr Met Lys Glu Glu Leu Asp Phe Gln Lys Asn Ile Tyr Ser Glu  
 50 55 60

Glu Leu Arg Glu Thr Lys Arg Arg His Glu Thr Arg Leu Val Glu Ile  
 65 70 75 80

Asp Asn Gly Lys Gln Arg Glu Phe Glu Ser Arg Leu Ala Asp Ala Leu  
 85 90 95

Gln Glu Leu Arg Ala Gln His Glu Asp Gln Val Glu Gln Tyr Lys Lys  
 100 105 110

Glu Leu Glu Lys Thr Tyr Ser Ala Lys Leu Asp Asn Ala Arg Gln Ser  
 115 120 125

Ala Glu Arg Asn Ser Asn Leu Val Gly Ala Ala His Glu Glu Leu Gln  
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Gln Ser Arg Ile Arg Ile Asp Ser Leu Ser Ala Gln Leu Ser Gln Leu  
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Gln Lys Gln Leu Ala Ala Lys Glu Ala Lys Leu Arg Asp Leu Glu Asp  
 165 170 175

Ser Leu Ala Arg Glu Arg Asp Thr Ser Arg Arg Leu Leu Ala Glu Lys  
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Glu	Arg	Glu	Met	Ala	Glu	Met	Arg	Ala	Arg	Met	Gln	Gln	Gln	Leu	Asp	195	200	205
Glu	Tyr	Gln	Glu	Leu	Leu	Asp	Ile	Lys	Leu	Ala	Leu	Asp	Met	Glu	Ile	210	215	220
His	Ala	Tyr	Arg	Lys	Leu	Leu	Glu	Gly	Glu	Glu	Glu	Arg	Leu	Arg	Leu	225	230	235
Ser	Pro	Ser	Pro	Thr	Ser	Gln	Arg	Ser	Arg	Gly	Arg	Ala	Ser	Ser	His	245	250	255
Ser	Ser	Gln	Thr	Gln	Gly	Gly	Gly	Ser	Val	Thr	Lys	Lys	Arg	Lys	Leu	260	265	270
Glu	Ser	Thr	Glu	Ser	Arg	Ser	Ser	Phe	Ser	Gln	His	Ala	Arg	Thr	Ser	275	280	285
Gly	Arg	Val	Ala	Val	Glu	Glu	Val	Asp	Glu	Glu	Gly	Lys	Phe	Val	Arg	290	295	300
Leu	Arg	Asn	Lys	Ser	Asn	Glu	Asp	Gln	Ser	Met	Gly	Asn	Trp	Gln	Ile	305	310	315
Lys	Arg	Gln	Asn	Gly	Asp	Asp	Pro	Leu	Leu	Thr	Tyr	Arg	Phe	Pro	Pro	325	330	335
Lys	Phe	Thr	Leu	Lys	Ala	Gly	Gln	Val	Val	Thr	Ile	Trp	Ala	Ala	Gly	340	345	350
Ala	Gly	Ala	Thr	His	Ser	Pro	Pro	Thr	Asp	Leu	Val	Trp	Lys	Ala	Gln	355	360	365
Asn	Thr	Trp	Gly	Cys	Gly	Asn	Ser	Leu	Arg	Thr	Ala	Leu	Ile	Asn	Ser	370	375	380
Thr	Gly	Glu	Glu	Val	Ala	Met	Arg	Lys	Leu	Val	Arg	Ser	Val	Thr	Val	385	390	395
Val	Glu	Asp	Asp	Glu	Asp	Glu	Asp	Gly	Asp	Asp	Leu	Leu	His	His	His	405	410	415
His	Gly	Ser	His	Cys	Ser	Ser	Ser	Gly	Asp	Pro	Ala	Glu	Tyr	Asn	Leu	420	425	430
Arg	Ser	Arg	Thr	Val	Leu	Cys	Gly	Thr	Cys	Gly	Gln	Pro	Ala	Asp	Lys	435	440	445
Ala	Ser	Ala	Ser	Gly	Ser	Gly	Ala	Gln	Val	Gly	Gly	Pro	Ile	Ser	Ser	450	455	460
Gly	Ser	Ser	Ala	Ser	Ser	Val	Thr	Val	Thr	Arg	Ser	Tyr	Arg	Ser	Val	465	470	475
Gly	Gly	Ser	Gly	Gly	Gly	Ser	Phe	Gly	Asp	Asn	Leu	Val	Thr	Arg	Ser	485	490	495

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 Lys Leu Gln Glu Glu Gly Gly Gly Ser Asp Glu Glu Glu Thr Gly Ser  
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cct tca gaa gat ggc atg cag agt gca cgc acc cag gca cgc cca aga 306  
 Pro Ser Glu Asp Gly Met Gln Ser Ala Arg Thr Gln Ala Arg Pro Arg  
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Cys Gly Arg Ala Glu Gln Asp Gln Cys Asn Leu Glu Val His Val Tyr	
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Asn Gln Glu Glu Asp Ser Phe Tyr Val His His Asp Ile Leu Leu Ser	
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Asp Ser Thr Gly Asn Tyr Ile Ala Val Gly Asn Met Thr Pro Val Ile	
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Leu Gly Ser Lys Leu Ser Lys Lys Lys Lys Lys Lys Gly Lys Lys Ser	
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Ser Ser Ala Glu Gly His Thr Asp Ala Val Leu Asp Leu Ser Trp Asn	
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Lys Leu Ile Arg Asn Val Leu Ala Ser Ala Ser Ala Asp Asn Thr Val	
270 275 280	
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Ile Leu Trp Asp Met Ser Leu Gly Lys Pro Ala Ala Ser Leu Ala Val	
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cac aca gac aag gtc caa aca ctg cag ttt cat cca ttt gaa gca cag	1026
His Thr Asp Lys Val Gln Thr Leu Gln Phe His Pro Phe Glu Ala Gln	
300 305 310	
act ctg att tct ggc tca tat gat aag tca gtg gct ttg tat gac tgc	1074
Thr Leu Ile Ser Gly Ser Tyr Asp Lys Ser Val Ala Leu Tyr Asp Cys	
315 320 325	
cga agt cca gat gaa agc cat cga atg tgg cga ttc agt ggg cag ata	1122
Arg Ser Pro Asp Glu Ser His Arg Met Trp Arg Phe Ser Gly Gln Ile	
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gag aga gtg act tgg aat cac ttt tca cct tgt cat ttc ttg gcc agt	1170
Glu Arg Val Thr Trp Asn His Phe Ser Pro Cys His Phe Leu Ala Ser	
350 355 360	
aca gat gac ggc ttt gta tat aat ttg gat gca cgt tca gat aag cca	1218
Thr Asp Asp Gly Phe Val Tyr Asn Leu Asp Ala Arg Ser Asp Lys Pro	
365 370 375	

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Ile Phe Thr Leu Asn Ala His Asn Asp Glu Ile Ser Gly Leu Asp Leu	
380 385 390	
agc agt caa atc aag ggc tgt ctc gtg act gct tca gct gac aaa tac	1314
Ser Ser Gln Ile Lys Gly Cys Leu Val Thr Ala Ser Ala Asp Lys Tyr	
395 400 405	
gtg aag atc tgg gac atc tta gga gat agg cca agt cta gtt cat tct	1362
Val Lys Ile Trp Asp Ile Leu Gly Asp Arg Pro Ser Leu Val His Ser	
410 415 420 425	
agg gac atg aaa atg gga gtt ctc ttc tgt tct tca tgt tgc cct gat	1410
Arg Asp Met Lys Met Gly Val Leu Phe Cys Ser Ser Cys Cys Pro Asp	
430 435 440	
ttg cca ttt att tat gcc ttt gga ggt caa aaa gaa ggg ctt cgg gtc	1458
Leu Pro Phe Ile Tyr Ala Phe Gly Gly Gln Lys Glu Gly Leu Arg Val	
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Trp Asp Ile Ser Thr Val Ser Ser Val Asn Glu Ala Phe Gly Arg Arg	
460 465 470	
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Glu Arg Leu Val Leu Gly Ser Ala Arg Asn Ser Ser Ile Ser Gly Pro	
475 480 485	
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Phe Gly Ser Arg Ser Ser Asp Thr Pro Met Glu Ser	
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Met Asn Arg Ser Arg Gln Val Thr Cys Val Ala Trp Val Arg Cys Gly
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Val Ala Lys Glu Thr Pro Asp Lys Val Glu Leu Ser Lys Glu Glu Val
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Lys Arg Leu Ile Ala Glu Ala Lys Glu Lys Leu Gln Glu Glu Gly Gly  
 35 40 45

Gly Ser Asp Glu Glu Glu Thr Gly Ser Pro Ser Glu Asp Gly Met Gln  
 50 55 60

Ser Ala Arg Thr Gln Ala Arg Pro Arg Glu Pro Leu Glu Asp Gly Asp  
 65 70 75 80

Pro Glu Asp Asp Arg Thr Leu Asp Asp Asp Glu Leu Ala Glu Tyr Asp  
 85 90 95

Leu Asp Lys Tyr Asp Glu Glu Gly Asp Pro Asp Ala Glu Thr Leu Gly  
 100 105 110

Glu Ser Leu Leu Gly Leu Thr Val Tyr Gly Ser Asn Asp Gln Asp Pro  
 115 120 125

Tyr Val Thr Leu Lys Asp Thr Glu Gln Tyr Glu Arg Glu Asp Phe Leu  
 130 135 140

Ile Lys Pro Ser Asp Asn Leu Ile Val Cys Gly Arg Ala Glu Gln Asp  
 145 150 155 160

Gln Cys Asn Leu Glu Val His Val Tyr Asn Gln Glu Glu Asp Ser Phe  
 165 170 175

Tyr Val His His Asp Ile Leu Leu Ser Ala Tyr Pro Leu Ser Val Glu  
 180 185 190

Trp Leu Asn Phe Asp Pro Ser Pro Asp Asp Ser Thr Gly Asn Tyr Ile  
 195 200 205

Ala Val Gly Asn Met Thr Pro Val Ile Glu Val Trp Asp Leu Asp Ile  
 210 215 220

Val Asp Ser Leu Glu Pro Val Phe Thr Leu Gly Ser Lys Leu Ser Lys  
 225 230 235 240

Lys Lys Lys Lys Lys Gly Lys Lys Ser Ser Ser Ala Glu Gly His Thr  
 245 250 255

Asp Ala Val Leu Asp Leu Ser Trp Asn Lys Leu Ile Arg Asn Val Leu  
 260 265 270

Ala Ser Ala Ser Ala Asp Asn Thr Val Ile Leu Trp Asp Met Ser Leu  
 275 280 285

Gly Lys Pro Ala Ala Ser Leu Ala Val His Thr Asp Lys Val Gln Thr  
 290 295 300

Leu Gln Phe His Pro Phe Glu Ala Gln Thr Leu Ile Ser Gly Ser Tyr  
 305 310 315 320

Asp Lys Ser Val Ala Leu Tyr Asp Cys Arg Ser Pro Asp Glu Ser His  
 325 330 335

Arg Met Trp Arg Phe Ser Gly Gln Ile Glu Arg Val Thr Trp Asn His  
 340 345 350

Phe Ser Pro Cys His Phe Leu Ala Ser Thr Asp Asp Gly Phe Val Tyr  
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Asn Leu Asp Ala Arg Ser Asp Lys Pro Ile Phe Thr Leu Asn Ala His  
 370 375 380

Asn Asp Glu Ile Ser Gly Leu Asp Leu Ser Ser Gln Ile Lys Gly Cys  
 385 390 395 400

Leu Val Thr Ala Ser Ala Asp Lys Tyr Val Lys Ile Trp Asp Ile Leu  
 405 410 415

Gly Asp Arg Pro Ser Leu Val His Ser Arg Asp Met Lys Met Gly Val  
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Leu Phe Cys Ser Ser Cys Cys Pro Asp Leu Pro Phe Ile Tyr Ala Phe  
 435 440 445

Gly Gly Gln Lys Glu Gly Leu Arg Val Trp Asp Ile Ser Thr Val Ser  
 450 455 460

Ser Val Asn Glu Ala Phe Gly Arg Arg Glu Arg Leu Val Leu Gly Ser  
 465 470 475 480

Ala Arg Asn Ser Ser Ile Ser Gly Pro Phe Gly Ser Arg Ser Ser Asp

485

490

495

Thr Pro Met Glu Ser  
500